INTRODUCTION TO MULTIMEDIA

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WHAT IS MULTIMEDIA?

- In a generic sense, **Multimedia** is simply the use of more than one media element. Hence, **Web-based multimedia** is defined as an online, interactive experience that incorporates two or more media elements including ***text, graphics, sound, animation and video***. A fundamental feature of most Web-based multimedia is **interactivity,** which gives user some control over the content

WHAT IS MULTIMEDIA?

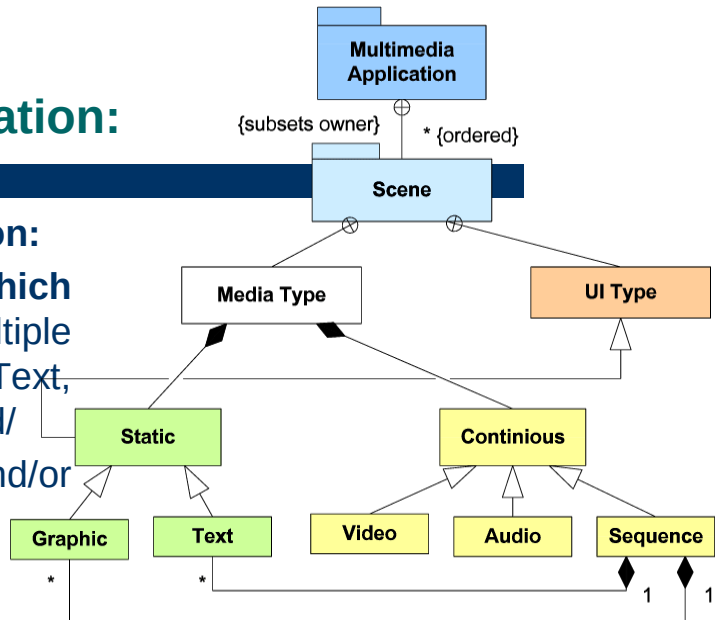
Multimedia – using more than one media:

- Text
- Graphics
- Animation
- Sound
- Video

Multimedia Application:

- **Multimedia Application:**

is an application which uses a collection of multiple media sources e.g. Text, Graphics, Images, Sound/ Audio, Animation and/or Video.



DIGITIZED MULTIMEDIA

- Today, this integration is accomplished by **digitizing** different media elements and then manipulating them with computer software
- **Digitized** – Media elements have been captured in a code that the computer can understand

Multimedia Applications

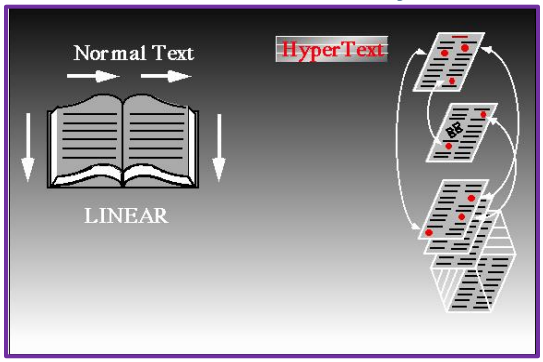
- Examples of Multimedia Applications include:
- World Wide Web
- Multimedia Authoring, e.g. Adobe/Macromedia Director
- Hypermedia courseware
- Video

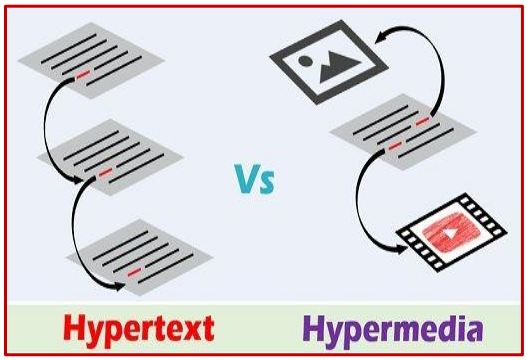
Multimedia Applications

- Interactive TV
- Computer Games
- Virtual reality
- Digital video editing and production systems
- Multimedia Database systems

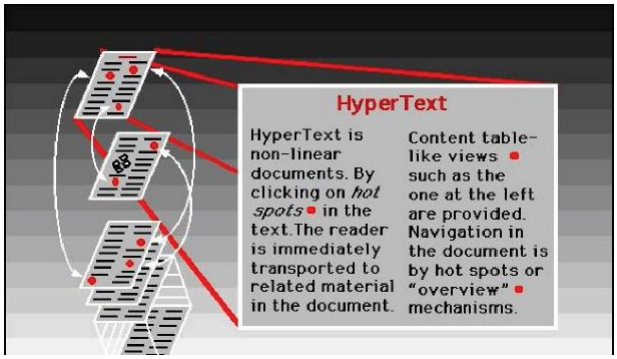
What is HyperText and HyperMedia?

- **Hypertext** is a text which contains ***links to other texts***.
- The term was invented by Ted Nelson around 1965.





What is HyperText and HyperMedia?

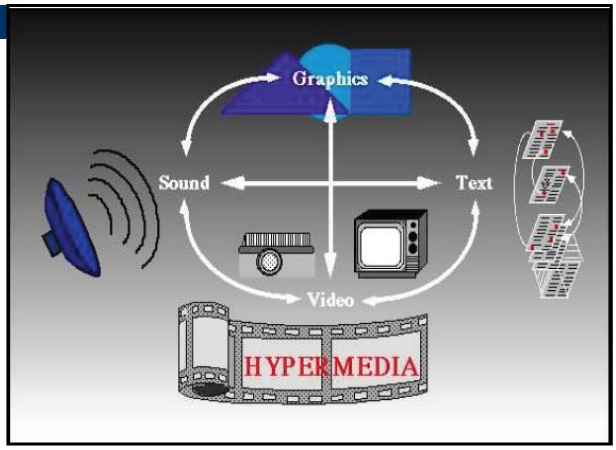


What is HyperText and HyperMedia?

- **HyperText Navigation**
- Traversal through pages of hypertext is therefore usually
- Non-linear (as explained later).

Hypermedia

- **HyperMedia** is not constrained to be text-based. It can include other media, e.g., graphics, images, and especially the continuous media – sound and video.



Example Hypermedia Applications?

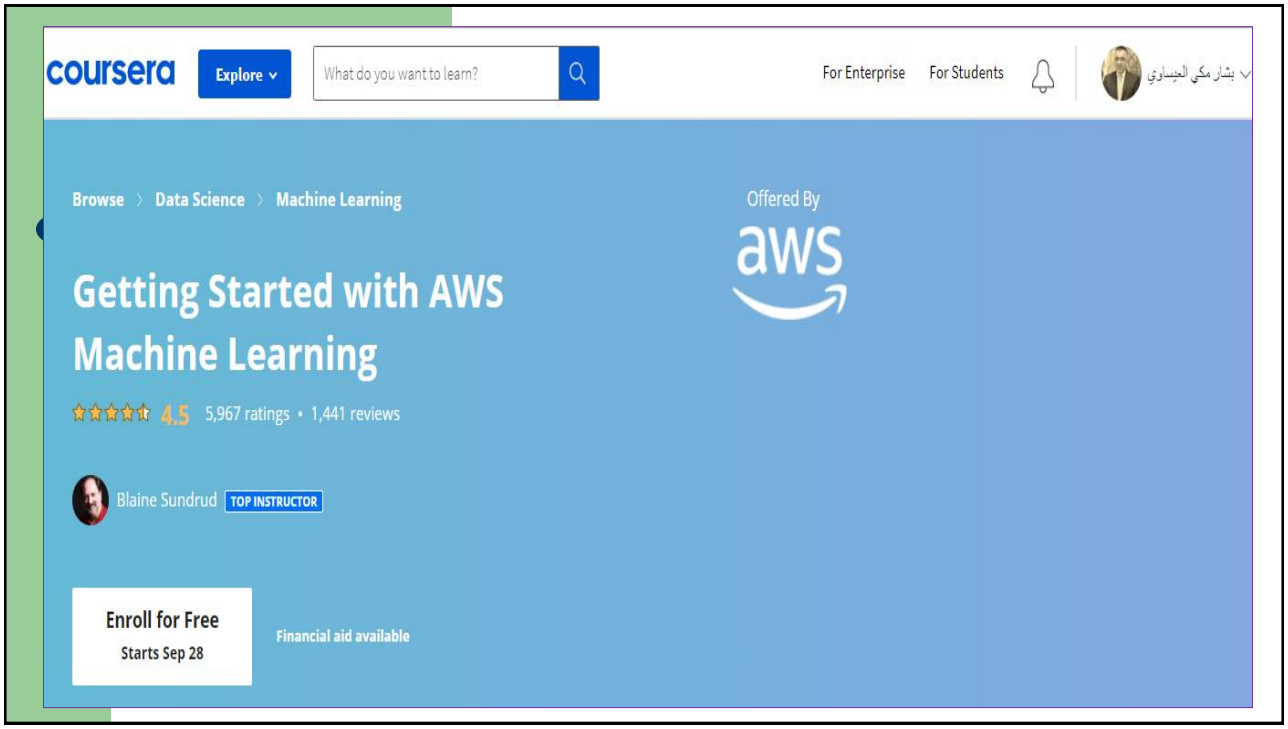
- The World Wide Web (WWW) is the best example of a hypermedia application.
- Powerpoint
- Adobe Acrobat (or other PDF software)
- Adobe Flash
- Many Others?

HYPERTEXT VERSUS HYPERMEDIA

Hypertext	Hypermedia
It refers to text which links to other chunks of text within same or different document.	It is an extension of hypertext which is not constrained to be text-based.
It is an interconnected network of documents linked together via strong cross referencing tools called hyperlinks.	It refers to a non-linear presentation of content that includes plain text, images, audio, video, and still or moving graphics.
It simply allows users to jump from one document to another by clicking on "go to" links.	It extends the ability of hypertext to include links within all sorts of multimedia objects.
Hypertext technology is based on effective human-computer interaction and relevant cross referencing of related items.	Hypermedia technology extends the use of multimedia elements to create clickable links that readers can both access and interact with.
It represents multimedia content in electronic text format.	It combines both hypertext and multimedia to represent a wealth of information.

LINEAR AND NONLINEAR MULTIMEDIA

- A multimedia website can be **Linear**, which users start at the beginning and progress through a set sequence of events until they reach the end. But most websites use a **Nonlinear** approach to navigation, which users have more control over what they are interested in pursuing.
- Example of Interactive MM-Website the portal of https://www.coursera.org/ ,



Types of multimedia

LINEAR MULTIMEDIA	NON-LINEAR MULTIMEDIA
Linear active content progresses without any navigational control for the viewer.	Non-linear content offers user interactivity to control progress as used with a computer game .
Cinema presentation is an example of linear multimedia.	Hypermedia is an example of non-linear multimedia.

INTERACTIVE MULTIMEDIA

- It enables the user to directly respond to and control any or all of the media elements. Hence, users of interactive multimedia applications become active participants instead of the passive recipients of information

IMPORTANCE OF MULTIMEDIA

- **"Tell me and I will forget; show me and I may remember; involve me and I will understand" (Chinese proverb)**
- Each person learns differently and each person is inspired by something different. The use of multimedia allows developers to tap into these differences.

IMPORTANCE OF MULTIMEDIA

- In fact, research shows that people remember only 20% of what they see, 30% of what they hear. When they see and hear it, they remember 50%, if we include some interaction; they will remember 80% of it

BENEFITS OF MULTIMEDIA

- Addresses multiple learning styles
- Provides an excellent way to convey content
- Uses a variety of media elements to reinforce one idea
- Activates multiple senses creating rich experiences
- Gives life to flat information
- Enhances user enjoyment
- Improves retention
- Enables users to control Web experience

WHERE DO WE USE MULTIMEDIA?

- Multimedia in Business

  Business application that are multimedia based include presentations, training, marketing, advertising, product demos, databases, catalogues, and networked communications. Multimedia is getting much utilization in training programs.
- Multimedia in School

  Schools are perhaps the most ideal target for multimedia. Its rich set of media is potential for delivering effective teaching. Multimedia equipped education lets the students. Learn at their own pace and at their own time. It is ideal in distance education and open learning systems wherein students need not to be physically present in class. Students can learn while having fun.

WHERE DO WE USE MULTIMEDIA?

- Multimedia at Home

  From cooking to gardening, home design to repair, indeed multimedia has made itself useful at home. It enables you to convert your video to digital format, store your pictures in a compact disc, and many more. Today, multimedia is also being applied in our TV and soon, multimedia projects will reach out homes via interactive TV (iTV).
- Multimedia in Public Places

  Multimedia is present in standalone terminals, or kiosks, in airport terminals, hotels, mall, train stations, museums, grocery stores, and more. It provides us information and help about a particular place. Interactive kiosks enables you to make a transaction without talking to a sales agent.

WHERE DO WE USE MULTIMEDIA?

- Multimedia in the Internet

  Multimedia was introduced in the Internet with the advent of the WWW. In fact, the Web is the multimedia part of the internet. In the early stages of the internet, you can view information in plain text. The Web enables multimedia to be delivered online. Playing live Internet games with multiple players around the world has caught much attention. Some e-learning systems use multimedia on the internet as a method to deliver learning materials to students anywhere.

WHERE DO WE USE MULTIMEDIA?

- Multimedia in Mobile Devices

  Mobile devices such as personal digital assistants (PDAs or handheld computers), smartphones, and mobile devices are not exceptions to multimedia. MMS (Multimedia Messages Services) is a store-and-forward method of transmitting graphics, video clips, sound files, and short text messages over wireless network using the WAP. It also supports email addressing, so the device can send-emails directly to communication between mobile phones.

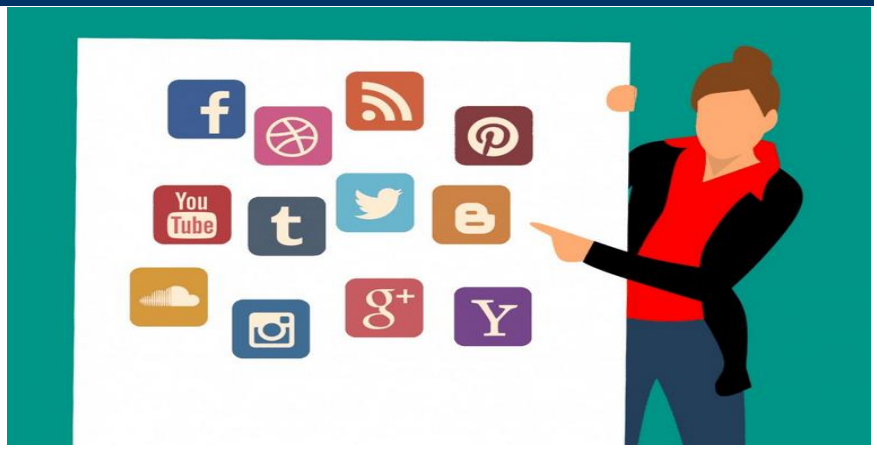
WEB-BASED MULTIMEDIA CATEGORIES

- Electronic Commerce (E-Commerce)
  Involves using web to serve clients and customers and is one way to provide solutions for companies that wish to sell products or services online. Multimedia is used extensively in advertising and marketing.
- Web-Based Training and Distance Learning
  The Web offers many options for delivering and receiving education over the distance. Web-based training is an instruction delivered over the Internet using a web browser.

WEB-BASED MULTIMEDIA CATEGORIES

- Research and References
  Today, newspaper, newsletters, magazines, books, encyclopaedias and other reference materials are being offered online via Web. In many cases, they represent “Electronic” versions of existing research and reference materials. An increasing number of self-help and how-to-guides are being offered as interactive multimedia applications on the Web. Some advantages: Cross-referencing, Expanded search capabilities, multisensory experiences.
- Entertainment and Games
  They are the examples of some of the most popular and most varied interactive multimedia sites available.

CAREERS IN WEB-BASED MULTIMEDIA



Management-Related Positions

- Executive Producer – Move a project into an through production
- Project Manager – forming a project, moving it into production and overseeing its creation

Production-Related Positions

- Audio Specialist – Music scores, sound effects, voice overs, vocals and transitional sounds, recording, editing and selecting voices, sounds and music
- Computer Programmer – Creates the underlying code that makes the website interactive and responsive to user's actions
- Video Specialist – Manages the process of capturing and editing original video

Production-Related Positions

- Web Designer – Develops or refines a design process and efficiently creates a cohesive and well-planned website from the front end
- Web Developer – Ensures the communication between the front end of the website and its back end is working
- Web Master – Making sure the web page is technically correct and functional on the Web Server

Art-Related Positions

- Animation Specialist – Creates 2D/3D animation by taking a sequence of static images and displaying them in rapid succession on the computer screen
- Art Director – Coordinate the creation of the artwork for the project
- Graphic Artist/Designer – Creating and designing all of the graphic images for a project

Art-Related Positions

- Interface Designer – Responsible for the look of the website interface and navigation methods
- Photographer – Shoots and captures appropriate, compelling and high quality photos
- Videographer - Shoots and captures appropriate, compelling and high quality video footage

Content-Related Positions

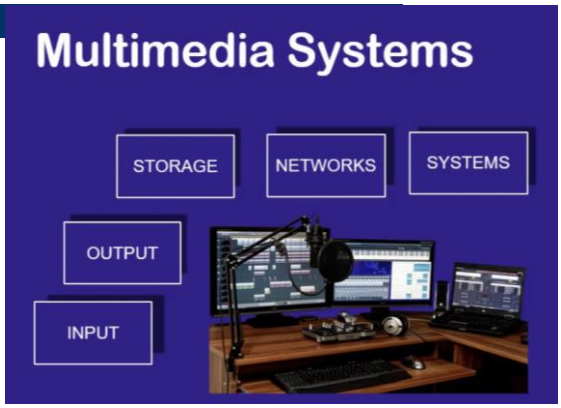
- Content Specialist – Providing authenticity and accuracy of information on the website
- Instructional Specialist – Expert in designing instructional projects
- Writers/Editors – Technical writers/scriptwriters, creative writers or journalist involved in the project

Support-Related Positions

- Production Positions – Entry level positions
- Quality Assurance – Responsible for testing the website on multiple platforms using different versions of different browsers
- Sales/Marketing – Provides input and feedback on the website
- Customer Support – Responds to the users who have questions and problems.

Multimedia Systems

- A ***Multimedia System*** is a system capable of processing multimedia data and applications.
- A ***Multimedia System*** is characterized by the processing, storage, generation, manipulation and rendition of Multimedia information.



Characteristics of a Multimedia System

- A Multimedia system has four basic characteristics:
  1. Multimedia systems must be ***computer controlled***.
  2. Multimedia systems are ***integrated***.
  3. The information they handle must be represented ***digitally***.
  4. The interface to the final presentation of media is usually ***interactive***.

Challenges for Multimedia Systems

Multimedia systems may have to render a variety of media at the same instant -- a distinction from normal applications. There is a temporal relationship between many forms of media (***e.g.*** Video and Audio. There are 2 forms of problems:

1. ***Sequencing*** within the media -- ***playing frames in correct order/time frame in video***
2. ***Synchronization*** -- inter-media scheduling (***e.g.*** Video and Audio). Lip synchronization is clearly important for humans to watch playback of video and audio and even animation and audio. Ever tried watching an out of (lip) sync film for a long time?

Multimedia Programming Languages: (SMIL)

What it is SMIL?

- Synchronized Multimedia Integration Language (SMIL) is to synchronized multimedia what HTML is to hyperlinked text. SMIL is a simple, vendor-neutral markup language designed to let Web builders of all skill levels schedule audio, video, text, and graphics files across a timeline without having to master development tools or complex programming languages.
- It is mainly meant to work with linear presentations where several types of media can be synchronized to one timeline. It does not work well with non-linear presentations and its ability to skip around in the timeline. For instance, with just a text editor and a few lines of HTML-like tags, SMIL lets Web builders specify such actions as ***play audio file A five seconds after video file B starts and then show image file C***.